# Adaptive Transformation of Ukraine's Economy in the Context of Covid-2019 Pandemic

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Abstract: The predictions of analysts and scientists are analyzed and the preconditions of the global economic crisis caused by Covid-2019 are determined. Scenarios for the development of the economic crisis and stages of forecasting economic development for Ukraine are considered. The program measures of the state authorities of some countries of the world and measures on overcoming of consequences of crisis situation in Ukraine are considered and the estimation of consequences of their realization with development of the corresponding offers is carried out.

## 1 INTRODUCTION

Not only have our daily lives been affected by the pandemic induced by the spread of the coronavirus infection, but also a number of global processes. Along with the shift in methodology, the instruments that defined the product's worth, produced profit, established trends, and set the pace for the economy's development shifted as well. Digitalization is one of the new tools that have undoubtedly made our lives easier during the lockdown.

Evidently, any modifications to the system result in changes to the functioning of its effective mechanisms. Demand is the most important mechanism in economics. Obsolete tools became less useful during the pandemic, and in some fields, they were found to be useless. They were replaced by digital tools that are quickly changing demand development.

Regardless of the contentious concerns, one thing is certain: the global market has changed as a result of the pandemic and will never revert to its pre-pandemic state. Profitability will be achieved only by adaptation to new conditions. The coronavirus outbreak had a negative influence on world trade, but it also created new chances and places for development, bringing to mankind's attention previously unmentioned challenges. Supply networks are reopening, commerce is resuming, and technology is evolving at a quicker rate than ever before. Without a doubt, the crisis has pushed forward important changes and will keep doing so (Samuelson, 1993).

The external environment's dynamism and variety compel governments to react instantly - to adapt. Adaptation is defined as "the process of modifying the properties of a system to achieve the best or at least acceptable effectiveness under changing conditions" or "the process of modifying the parameters and structure of a system, as well as possibly controlling actions based on current data, to achieve a certain, usually optimal, state of the system under initial uncertainty and changing operating conditions".

As demonstrated in the scientific works of Y. Zavadsky, T. Osovska, O. Yushkevich, V.

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Kaznacheev, V. Lozovoy, E. Chizhenkov, N. Shevchuk, K. Zaika, D. Soltys, and G. Khanaliev, the scientific and practical phenomenon of adaptation has a fairly broad range of scientific and methodological applications. These studies enable the identification of characteristics such as an object's or subject's adaptability to shifting situations or circumstances, including changing functions, structure, relationships, or parameters, in order to facilitate adaptation.

According to Meskon M. (Mescon, Albert and Hedouri, 1997) the basis of modern management is adaptation, as frequent changes in the external environment and internal environment of functioning socioeconomic systems consistently lead to crisis situations.

According to the neoclassical theory of adaptation proposed by A. Marshall, S. Brew, P. Samuelson (Samuelson, 1993) etc., the economic system's subjects' behaviour is governed by the following categories of constraints:

- resources (lack and depletion of resources);
- technical (achieved level of technological development and innovation);
- conjuncture (characteristics of the markets).

In accordance with T. Grinko's study (Grinko, 2012), where adaptation is defined as a change in the current state of an object as a result of changing environmental conditions necessary for its existence, we would further consider the following classification of various types of adaptation:

1) private (linear) adaptation - adaptation targeted at selecting individual factors independently of their agreement and without needing a fundamental reorganization of the object's existing functional system;

2) systemic (multilevel) adaptation - adaptation that requires a change in management, a reinterpretation of priorities, a formation of new connections, and a systematic reorganization of operations;

3) problematic adaptation-adaptation aiming at resolving the "cause" of the requirement for adaptation;

4) complicated adaptation-adaptation aimed at altering the object of adaptation and necessitating system rearrangement;

5) product (effective) adaptation-adaptation that occurs when the product of production must be changed, when changes to the internal environment are required to achieve the expected level of results at the output of the production system;

6) "classical" adaptation-adaptation is required when the external environment influences the adapting object. As a result, the response is the traditional approach associated with a change in the organization's internal environment;

7) programme adaptation-adaptation in which the external environment's impact is balanced by the object of adaptation's internal activity, which enables it to approach the desired state through the utilization of known and currently available environmental factors;

8) tolerant adaptation - occurs when an item, having everything necessary and at its disposal, can also serve as a subject of control, allowing it to apply an approach based on event prediction and future situation.

Therefore, adaptation is "a response to changing conditions that mitigates the risk of a system's behaviour degrading in efficiency".

The authors prepared the article using a methodological approach that is based on the results of their previous scientific works. The authors used system analysis and synthesis methods, specifically causal and historical analysis, to establish the essence and types of adaptation; induction and deduction to determine the favourable trends of a sustainable economy in the context of mitigating the impact of challenges and threats; modelling and analogy to adapt a dynamic model of the economic development management system under the influence of the COVID-19 pandemic; simulation modelling - in the process of developing different scenarios for Ukraine's future.

## 2 BACKGROUND

The extraordinary nature of the crisis caused by the spread of the SARS-CoV-2 coronavirus is that it manifests not so much as a break in the development trajectory as a significant shift in development on both macro and micro levels, against the backdrop of fundamental changes in society's way of life. The changes impacted every facet of existence (communication/ mode of work/ training, etc.). And the forced implementation of permanent quarantine restrictions in most of the world's countries and Ukraine, which varied in scope and timing throughout the year, resulted in an unprecedented shift in the behaviour of economic entities at both the consumption and production levels, as precaution against the possibility of permanent restrictions became the dominant motivational principle. In many countries around the world, economic growth slowed down because of the pandemic and unusual quarantine rules. This includes the EU and Ukraine.

By and large, the decline in the state of Ukraine in 2020 is rather minor in comparison to many other countries. Therefore, when comparing Ukraine's economic performance in 2020 to that of the EU (27) and that of neighbouring countries such as Hungary and Slovakia, Ukraine has negative interest rates and stronger GDP dynamics in 2020 (Figure 1).

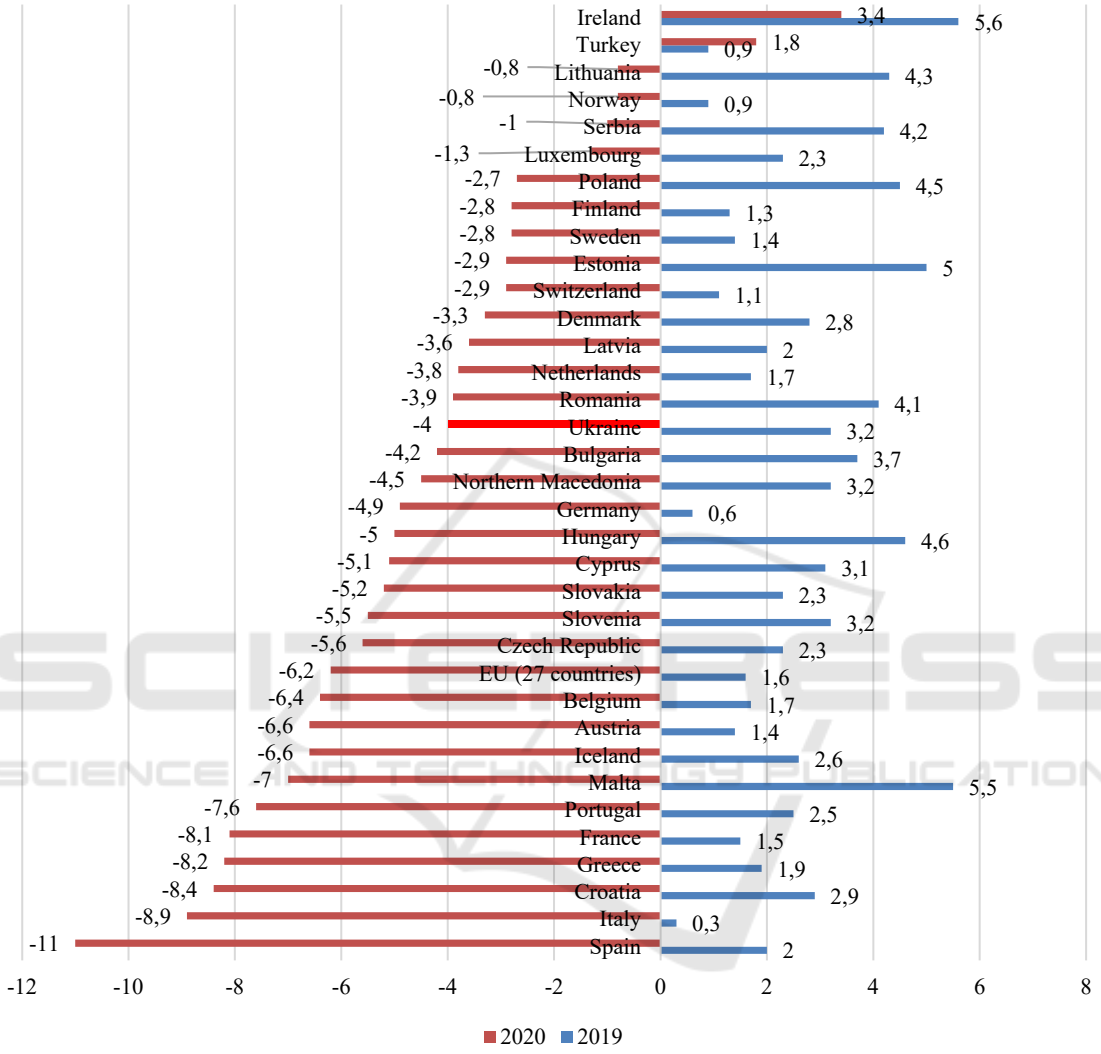



Figure 1: Change in GDP in Ukraine and EU countries, compared to the corresponding period of the previous year, % (Ministry of Economic Development, 2021).

The reason for this accomplishment is primarily due to our economy's transformational nature. Weak participation in global value-added production chains, a sizable share of shadow businesses and income, underdeveloped tourism, a significant share of agriculture (which ensured food security), a sizable share of large-scale production that continued to operate even during peak periods, and the capacity of Ukrainians to survive and adapt to a variety of difficult circumstances all contributed to this.

To establish a national strategy for economic development in Ukraine, as in any other European country, international ratings are utilized as indicators of the country's internal and external environment (Table 1).

Ukraine's place in the world rankings is in a state of flux. It is worth noting that, between 2014 and 2020, Ukraine increased its position in the international arena in terms of the world's strongest militaries, the world's happiness rating, economic freedom, ease of doing business (its conduct), and democracy.

However, it was in 2020 that the state's position was marginally weakened in terms of countries' competitiveness ratings and perceptions of corruption. Ukraine is a relative outsider in the world's ranking of innovative economies, having dropped from 41st to 56th place since 2016.

Table 1: Indicators for assessing the effectiveness of public policy in Ukraine: the international dimension.

| № | Indicator | Place in the ranking | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
| 1 | Press Freedom Index | 127 | 129 | 107 | 102 | 101 | 102 | 96 |
| 2 | Global Firepower | 21 | 21 | 25 | 25 | 30 | 29 | 27 |
| 3 | World Happiness Report | 111 | 123 | 132 | 133 | 138 | 133 | 123 |
| 4 | The Global Competitiveness Index | 49 | 60 | 59 | 60 | 59 | 54 | 55 |
| 5 | The Index of Economic Freedom | 155 | 162 | 162 | 166 | 150 | 147 | 134 |
| 6 | Ease of Doing Business Index | 112 | 96 | 83 | 80 | 76 | 71 | 64 |
| 7 | Corruption perception index | 144 | 142 | 130 | 131 | 130 | 120 | 126 |
| 8 | Democracy Index | 92 | 88 | 86 | 86 | 84 | 83 | 78 |
| 9 | Worlds most innovative economies | 49 | 33 | 41 | 42 | 46 | 53 | 56 |

There are solely economic reasons for the Ukrainian economy's slight deterioration. Among them, the government and the NBU have implemented measures aimed at mitigating the negative effects of the COVID-19 pandemic by assisting the population and businesses, rapidly adapting certain sectors of the economy to work under social restrictions, and, unlike in previous crises, maintaining financial sector stability. Given the limited demand, the government and the NBU expect inflation to reach 5% at the end of the year, which corresponds to the inflation target. All of these things add up to create a positive level of domestic consumer demand.

Thus, home consumer demand lost the least during the crisis and was the only source of GDP growth in 2020.

Two factors contributed to the demand's positive dynamics.

First, the government's social policy. The minimum wage was increased (from UAH 4,723 to UAH 5,000 on January 1, 2020), labour rights for employees and internally displaced persons were guaranteed, and temporary disability benefits equal to 50% of the average salary were paid in the fight against COVID-19. Additionally, it assists employers from small and medium-sized businesses with partial unemployment throughout the quarantine time (Ministry of Economic Development, 2021).

Despite the difficulties encountered in developing labour market conditions during Ukraine's and the world's lockdowns, the unemployment rate in Ukraine remained within the projected ranges for the year. Thus, the PES estimates that 1,674.2 thousand individuals became unemployed in 2020, the unemployment rate for the population aged 15–70 in 2020 was 9.5 % of the labour force of the corresponding age, taking into account the 4.0 % decline in the number of working people aged 15–70 in 2019.

The second factor contributing to demand growth was the overall positive dynamics of nominal wages as a result of the continued growth of certain sectors of the economy (wholesale and retail trade, financial and IT sectors, chemical and pharmaceutical industries) in the context of increased demand for data services and products of foreign trade activity (FTA).

In general, the nominal average monthly wage of full-time employees increased by 10.4 % to UAH 11 591 in 2020 (from UAH 10,497 in 2019), and real wages increased by 7.4 %, which enabled the government to maintain a positive level of household demand even after accounting for the compensation social payments imposed by the government.

Unfortunately, despite a considerable rise in public capital spending, it was nearly impossible to offset the decline in investment demand. The investment standstill has become one of the primary symptoms of the COVID-19 pandemic, against a

backdrop of significant uncertainty. By and large, gross fixed capital formation (GFCF) constituted the largest demand component to decrease, at 24.4% in 2020 (against an increase of 11.7% in 2019) (Report coronavirus cases).

Investments decreased across practically all sectors of the economy, except for postal and courier services and telecommunications (wireless communications), which are directly tied to activities subject to quarantine regulations. Among the FTA that experienced the greatest decline in master capital investments were air transport, art, sports, entertainment, and recreation, all of which were included in the list of activities subject to quarantine.

External demand is quite low, and protectionism from some trading partners has aggravated existing production challenges in several nations, given that economic and social activity in the majority of countries has been focused on fighting the COVID-19 pandemic. The above resulted in negative effects on foreign economic activity, given the Ukrainian economy's export focus. Additionally, a lower agricultural output and a deteriorating external economic situation for some types of Ukrainian export goods were factors (in particular, ferrous metals, corn, and fertilizers). Thus, according to preliminary data from the National Bank, exports of goods and services declined by 4.6 % in value terms in 2020. Simultaneously, imports faced bigger losses than exports in the absence of significant exchange rate variations. Imports of goods and services declined by 17.9 % in value terms compared to 2019. In 2020, the balance of trade in goods and services was "minus" $1,813 million (Ministry of Economic Development, 2021).

Globally, the exceptional economic situation and periodic limits on the activities of businesses and organizations aimed at preventing the spread of infection have had an effect on both the dynamics of the major components of demand and, consequently, on production activity. Furthermore, it is worth noting that production responded not just to demand dynamics, but also to direct quarantine restrictions and temporary difficulty getting sufficient imported raw materials.

Thus, in a sectoral context, the most tangible impact was felt primarily by industries that require the concentration of numerous people in a single room or their long-term communication and work at a dangerously close distance from an infectious standpoint. As a result, the services sector incurred huge losses, including passenger transportation (53.9% decline in passenger turnover), catering facilities, hotels, restaurants, etc. And this is despite the fact that household demand has remained constant. These are primarily small and medium-sized businesses whose operations are restricted by a variety of prohibitions and quarantine regulations.

As a result, industries that are primarily focused on their home market and are capable of rapidly adapting their operations to changing conditions experienced significantly fewer losses as a result of their use of digital technology. For instance, the pharmaceutical industry (which is expected to grow by 3% in 2020) and chemical production (which is expected to grow by 5.1%), the food industry (which is expected to decrease by only 0.8%), the IT-sector, the financial sector, and, of course, the health security sector, which bears the brunt of the fight against the coronavirus (Kuznetsova, 2020).

Additionally, investment cycle industries' output was severely reduced (in particular, mechanical engineering's by 17.6%), except for building, which grow by 5.6%. Furthermore, it indicated a considerable decline in the amount of export-oriented manufacturing (especially metallurgy— by 8.7%).

However, the decline in GDP is less than the decline in other indices of the economy's major sectors, most notably industry (decrease by 4.5%) and agriculture (decrease by 11.5%). The reason for this is that some types of economic activity, which were historically determined to be the main drivers of GDP growth, were compensated for by an increase or a negligible decrease in the performance of others, which proved to be less vulnerable, more adaptable to realities, or even benefited from the growth in demand for their products.

The fact that Ukraine avoided financial destabilisation during the crisis and maintained uninterrupted banking activity allowed for the active use of financial mechanisms to assist society and the economy in combating the crisis. The government's assistance was critical in general, particularly the prioritisation of budgetary money to fulfil medical demands and repair transportation and social infrastructure, as well as to assist the populace and businesses in stimulating demand.

In turn, the mobile movement of enterprises to new modes of work process organization (remote/ home-based work and training) boosted demand for new digital services and the provision of existing digital services, including conducting trade and business.

UNCTAD suggests temporarily abandoning austerity and pursuing balanced macroeconomic expansion until the private sector begins to expand its spendings. This policy assumes an acceleration of wage growth for low-income employees while

simultaneously lowering real interest rates to negative levels. This effectively means that a part of the primary balance of the debt would be written off, which would encourage businesses, the populace, and the government to spend the loan funds. Additionally, the COVID-19 crisis may be an appropriate time to establish a wealth tax, as even a minor increase in the taxes of high-income individuals and businesses would have a substantial effect.

More ambitious steps are required to ensure a global recovery following the global crisis. Firstly, it is discussing a large-scale extra distribution of special drawing rights (SDR)—a type of international reserve asset issued by the International Monetary Fund and convertible into hard cash. By 2020, over $204 billion in special drawing rights will have been issued, equating to approximately $288 billion. USA. Around 90% of all SDRs were distributed during the 2009 global financial crisis. UNCTAD wants to multiply this figure by 2.5 trillion and distribute new SDRs in US dollars. Developing countries would receive the equivalent of $1 trillion in this case to cover current liquidity requirements. This would cost Ukraine 50 billion dollars (Trade and development report, 2020).

Secondly, the idea entails a Marshall Plan-style approach to global health recovery. This is not just about medicine; it is also about access to safe drinking water and sanitation, as well as food security and working and housing situations. UNCTAD estimates that global donors may commit up to 600 billion dollars to similar causes over the next year and a half via grant assistance or interest-free loans.

Simultaneously, UNCTAD recommends establishing a new state-controlled credit rating agency to compete with the private sector, as well as a worldwide sovereign debt authority that is independent of the private sector. It must avoid the escalation of liquidity crises into recurrent sovereign defaults. Its responsibilities could include the creation of a publicly available register of countries' loans and obligations. Additionally, such a worldwide organization might establish an international legal framework for automatic debt suspension during times of crisis and a method for resolving such debts in a fair, efficient, and transparent manner.

Thus, UNCTAD provides scenarios for economic growth following the pandemic's resolution and emphasizes the importance of integrating driver growth, outcomes, and budgetary requirements into a “growth recovery” scenario (Table 2).

Table 2: A ‘growth revival’ scenario compared with the baseline, 2022–2030 (per cent).

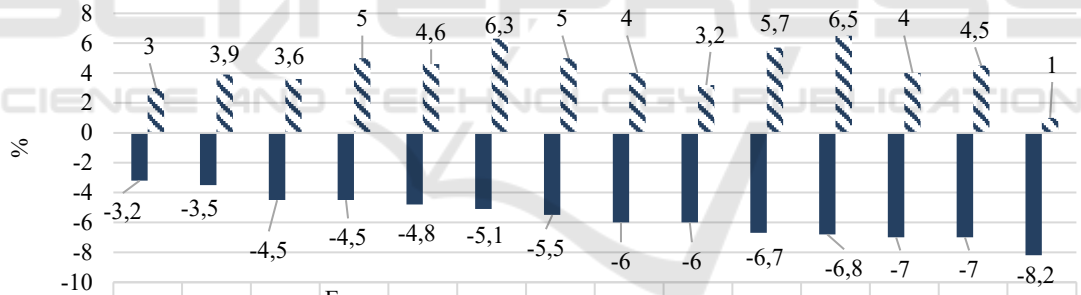
| Indicators | World economy | Developed: current account deficit economies | Developed: current account surplus economies | Emerging: current account deficit economies | Emerging: net energy exporting economies | Emerging: current account surplus economies |
|---|---|---|---|---|---|---|
| GDP growth: average 2022–2030 [baseline] | 2.0 | 1.0 | 0.9 | 2.3 | 1.9 | 4.3 |
| ['growth revival' scenario] | 3.8 | 2.8 | 2.6 | 5.0 | 4.7 | 5.3 |
| Private investment growth: average 2022–2030 [baseline] | 3.8 | 2.0 | 2.1 | 2.3 | 2.8 | 5.9 |
| ['growth revival' scenario] | 6.0 | 5.6 | 6.4 | 6.6 | 7.8 | 5.1 |
| Government spending growth: average 2022–2030 [baseline] | 1.2 | -0.1 | -0.2 | 2.1 | 1.5 | 2.3 |
| ['growth revival' scenario] | 3.1 | 2.4 | 2.1 | 4.1 | 3.8 | 3.4 |
| Government spending (percent of GDP): average 2022–2030 [baseline] | 19.8 | 18.6 | 22.6 | 18.1 | 22.2 | 18.3 |
| ['growth revival' scenario] | 19.9 | 19.1 | 23.4 | 17.1 | 21.8 | 18.9 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Government debt ratio [per cent of GDP]:<br>at year 2021<br>at year 2030 [baseline]<br>['growth revival' scenario] | 89.6<br>91.8<br>76.3 | 119.7<br>139.6<br>113.7 | 123.4<br>128.7<br>115.5 | 84.5<br>105.2<br>70.7 | 56.8<br>67.8<br>43.9 | 65.8<br>48.1<br>53.6 |
| Share of labour income:<br>average 2022–2030 [baseline]<br>['growth revival' scenario] | 49.8<br>54.0 | 51.1<br>56.5 | 51.5<br>55.9 | 45.0<br>49.7 | 44.4<br>48.7 | 54.2<br>57.3 |

According to UNCTAD research, austerity measures stifle economic growth and do not ensure public debt sustainability. On the contrary, and particularly in countries with weaker economies, budget deficits are frequently the result of the government squeezing out the private sector, resulting in decreased tax revenues and increased unemployment. As a result, reverting prematurely to a policy of high deficits following the recent crisis could be perilous and result in a slowdown in economic growth. According to the organization, this equates to approximately one percentage point per year for the next decade. The consequences can be particularly severe for developing countries, where fiscal space is constrained by high debt levels, monetary policy is under external pressure, and the informal economy cannot grow on its modest resources alone.

The authors attempt to estimate the prospects for the development of the Ukrainian economy in the aftermath of the global COVID-19 pandemic, taking into consideration scientific, technological, information-psychological, and social elements.

Considering the forecasts generated by several analytic structures is below (Figure 2).




| | World Bank | Apha Bank | Moodys | European Bank for Reconstruction and Development | Ministry of Economy of Ukraine | J.P. Morgan | S&P | National Bank | Consensus forecast of Ukrainian analysts | ICU | Bank of America | Dragon Capital | Capital Timea | The International Monetary Fund |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2020 | -3,2 | -3,5 | -4,5 | -4,5 | -4,8 | -5,1 | -5,5 | -6 | -6 | -6,7 | -6,8 | -7 | -7 | -8,2 |
| 2021 | 3 | 3,9 | 3,6 | 5 | 4,6 | 6,3 | 5 | 4 | 3,2 | 5,7 | 6,5 | 4 | 4,5 | 1 |

Figure 2: Forecast estimates of Ukraine's GDP dynamics made by various expert-analytical organizations (Kuznetsova, 2020).

Thus, the International Monetary Fund has the lowest expectations, which is explained by the low savings stock of Ukrainian households and the economy's minimal government assistance. The World Bank and the EBRD both make optimistic estimates.

The primary challenges and directions for economic adaptation in Ukraine as a result of the

COVID-19 pandemic are:

1. Medicine has proved an inability to deal with severe obstacles. The discovery of new viruses and the subsequent fight against them proceed at a slower rate. If the virus becomes more aggressive, human civilization may suffer a substantial decline, wreaking havoc on the economy.
2. All bureaucratic bodies must be shifted entirely online, so that the state is not reliant on people's capacity to come to work or the necessary institutions in the case of new pandemics.
3. It is critical to shift the majority of training to an online format, which would serve as a backup in the case of natural disasters, but also as an additional opportunity to learn.
4. It has become evident that infrastructure is crucial in the event of unforeseeable events. Hence, the growth of the Internet, as well as the availability of stable energy and water, ensure the country's survival in the event of a crisis. Clearly, advancements in this field would have an effect on the automation of distribution systems, which is critical during a crisis.

Thus, the end of the pandemic and the economic crisis should result in the formation of a new country with a slightly different economic structure, but one that is more prepared for natural disasters (Stavytsky, 2020).

The primary trend is an endeavour by individuals to establish a sense of self-worth in this profoundly altered reality. This may be the most essential lesson for Ukrainian businesses: there is still a market for many of them; they simply need to look for it, discover it, and understand how you can be useful in this situation. From an economic theory perspective, this situation represents J. Keynes' decisive win over the Austrian school of economics, demonstrating that the state's intervention in a crisis is crucial and that leaving everything to market forces is obviously a wrong path that would not result in optimal solutions. Given the extent to which the state controls the financial industry and banks in Ukraine, it gives a reason to anticipate a relatively speedy exit from the crisis, subject to other favourable conditions (Radchuk, 2022).

# 3 CONCLUSIONS

Ukraine passed the COVID-19 pandemic's effect test. And now, the economy's predicament is largely determined by the dynamics and scope of the pandemic's spread, as well as by the prevailing factors of constrained demand and a high degree of uncertainty about the near future. Consequently, recovering in the coming years would be contingent on the government's ability to apply restrictive measures under the auspices of “adaptive quarantine” and whether they would revert to a harsh lockdown. In any case, it would be necessary to alter government and business strategies, particularly in terms of approaches to recession management, international production chains and long-term investments, domestic economic management, and international reserves management, and measures to strengthen Ukraine's economy and society's resilience to future crises would need to be developed and implemented more responsibly.

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